Remarks

The Applicants respectfully request reconsideration of the application in view of the foregoing amendments and following remarks.

Before the present amendment, claims 21-32 and 60-88 were pending in the application. Claims 1-20 and 33-59 were canceled without prejudice in response to a restriction requirement.

Upon entry of the present amendment, claims 22, 24, 26, 29-32, 61, 64, 65, 67, 69, 72-75, 78, 79, 81, 83 and 85-91 are pending. Claims 1-21, 23, 25, 27, 28, 33-60, 62, 63, 66, 68, 70, 71, 76, 77, 80, 82 and 84 have been canceled without prejudice. Claims 22, 24, 26, 64, 67, 69, 78, 81, and 83 have been amended. The application as filed supports the amendments at, for example, pages 25-27. The Applicants have added dependent claims 89-91, which are supported in the application as filed at, for example, pages 26 and 27.

I. Request for Initialed 1449 Forms.

The Applicants received with the Office action copies of 1449 forms for Information Disclosure Statements filed on July 28, 2004, March 1, 2006, and May 3, 2007. Although the Examiner initialed many of the references on these forms, each copy provided by the examiner includes some references that are not initialed. The Applicants respectfully request that the Examiner provide new copies of the respective 1449 forms to indicate that all submitted references have been considered.

II. Claims 22, 24, 61, 64, 65, 67, 78, 79 and 81 Should Be Allowable.

In the Office action dated July 2, 2007 ("Office action"), the Examiner rejects claims 21-25, 60-68 and 76-82 under 35 U.S.C. 102(b) as being unpatentable over U.S. Patent No. 5,974,184 to Eifrig et al. ("Eifrig patent"). The Eifrig patent fails to teach or suggest at least one limitation of each of claims 22, 24, 61, 64, 65, 67, 78, 79 and 81.

Method claim 22, as amended, recites:

> wherein the set of DC predictor selection rules indicates the selected DC predictor as follows:
>
> if the top-left block, the left block, and the top block are intra-coded, the selected DC predictor depends on respective DC values of the top-left block, the left block, and the top block;

> if the top-left block is not intra-coded but the left block and the top block are intra-coded, the selected DC predictor depends on the respective DC values of the top block and the left block;
>
> if the left block is not intra-coded but the top block is intra-coded, the selected DC predictor is the DC value of the top block;
>
> if the top block is not intra-coded but the left block is intra-coded, the selected DC predictor is the DC value of the left block;
>
> if the left block is not intra-coded and the top block is not intra-coded, DC prediction is skipped for the current block;

According to claim 22, a tool such as a video decoder decodes a field-coded macroblock that includes one or more intra-coded blocks. For a current intra-coded block in the macroblock, the tool finds a DC differential and selecting a DC predictor from among multiple candidate blocks according to a set of DC predictor selection rules. Figure 19 shows example candidate blocks A, B and C in some implementations. The multiple candidate blocks include a top block above the current block, a left block left of the current block, and a top-left block above and to the left of the current block. In particular, the set of DC predictor selection rules indicates how to handle DC prediction as follows.

- If the top-left block, the left block, and the top block are intra-coded, the selected DC predictor depends on respective DC values of the top-left block, the left block, and the top block.
- If the top-left block is not intra-coded but the left block and the top block are intra-coded, the selected DC predictor depends on the respective DC values of the top block and the left block.
- If the left block is not intra-coded but the top block is intra-coded, the selected DC predictor is the DC value of the top block.
- If the top block is not intra-coded but the left block is intra-coded, the selected DC predictor is the DC value of the left block.
- If the left block is not intra-coded and the top block is not intra-coded, DC prediction is skipped for the current block.

See Application, page 26. The tool obtains a DC value for the current block. If DC prediction is skipped for the current block, the tool uses the DC differential as the DC value for the current block. On the other hand, if DC prediction is used for the current block, the tool adds the selected DC predictor to the DC differential.

Each of claims 64 (computer-readable media claim) and 78 (system claim), as amended, also includes the above-cited language from claim 22.

The Eifrig patent fails to teach or suggest the above-cited "DC predictor selection rules" of claims 22, 64 and 78, respectively. The Eifrig patent describes DC prediction and AC prediction for DCT coefficients of blocks of video frames. Eifrig patent, Abstract, 2:61-67, 4:1-6, 7:22-54, 9:5-11:65, 12:56-13:45. The Eifrig patent describes special treatment for candidate blocks that are missing because they are outside a video object plane ("VOP") or frame boundary, or not intra-coded. According to the Eifrig patent:

> For linear quantization of DC coefficients, the QDC predictor value of block X, QDC'_X, is obtained from either the QDC value of block A, QDC_A, or the QDC value of block C, QDC_C, based on a comparison of horizontal and vertical QDC gradients. In particular, if ($|QDC_A - QDC_B| < |QDC_B - QDC_C|$), then $QDC'_X = QDC_C$. Otherwise, $QDC'_X = QDC_A$.
> ...
> *If any of the blocks A, B, or C are outside of a VOP or frame boundary, or they do not belong to an INTRA coded macroblock, their QDC prediction values are assumed to take a value of* $2^{(bits\_per\_pixel-1)}$. For example, with bits_per_pixel=8, a value of 2^7=128 is used.

Eifrig patent, 7:34-53, emphasis added. In other words, for any block A, B, or C that is not intra-coded, a "dummy" value of $2^{(bits\_per\_pixel-1)}$ is used for it in the rule "if ($|QDC_A - QDC_B| < |QDC_B - QDC_C|$), then $QDC'_X = QDC_C$. Otherwise, $QDC'_X = QDC_A$."

This "selection algorithm" is applied during encoding according to the Eifrig patent and may also be applied during decoding. Eifrig patent, 13:35-41. Or, the directions of DC prediction and AC prediction are explicitly signaled in the bitstream for use by the decoder. Eifrig patent, 13:14-30. The decoder can identify predictor blocks that are "zeroed" predictors using other signaled bits or by independently checking. "[O]ther bits or codewords or the like may be used to indicate that a zeroed predictor is to be used for either the DC or AC coefficients. Or, the decoder may independently check to see if a selected predictor block is INTER coded or outside the current VOP, and set the predictor coefficients to zero or to a non-zero constant as required." Eifrig patent, 13:28-34.

The Eifrig patent thus describes special treatment for predictor blocks that are not intra-coded, but it proposes mechanisms that lead away from the above-cited "DC predictor selection rules" of claims 22, 64, and 78, respectively. Using a dummy value such as $2^{(bits\_per\_pixel-1)}$ for a

predictor block that is not intra-coded (as in the Eifrig patent) is different than, and leads away from, the "DC predictor selection rules" of claims 22, 64 and 78, respectively. Moreover, explicitly signaling a "zeroed" predictor with additional bits in a bitstream (as in the Eifrig patent) is different than, and leads away from, the "DC predictor selection rules" of claims 22, 64 and 78, respectively. Finally, selecting a predictor block based upon signaled bits or a selection algorithm then checking if it is INTER coded (as in the Eifrig patent) is different than, and leads away from, the "DC predictor selection rules" of claims 22, 64 and 78, respectively.

For at least this reason, independent claims 22, 64, and 78 should be allowable. Each of dependent claims 24, 61, 65, 79 and 81 depends from one of claims 22, 24, and 78 and, for at least this reason, should be allowable. The Applicants will not belabor the merits of the separate patentability of dependent claims 24, 61, 65, 79 and 81.

III. Claims 26, 29, 30, 69, 72, 73, 83, 85 and 86 Should Be Allowable.

In the Office action, the Examiner rejects claims 26-30, 69-73 and 83-86 under 35 U.S.C. 102(e) as being unpatentable over U.S. Patent Application Publication No. 2004/0141654 ("Jeng publication"). The Jeng publication fails to teach or suggest at least one limitation of each of claims 26-30, 69-73 and 83-86.

Each of claims 26 (method claim), 69 (computer-readable media claim) and 83 (system claim), as amended, recites:

> wherein the set of DC predictor selection rules indicates the selected DC predictor as follows:
>
> if the top-left block, the left block, and the top block are intra-coded, the selected DC predictor depends on respective DC values of the top-left block, the left block, and the top block;
>
> if the top-left block is not intra-coded but the left block and the top block are intra-coded, the selected DC predictor depends on the respective DC values of the top block and the left block;
>
> if the left block is not intra-coded but the top block is intra-coded, the selected DC predictor is the DC value of the top block;
>
> if the top block is not intra-coded but the left block is intra-coded, the selected DC predictor is the DC value of the left block;
>
> if the left block is not intra-coded and the top block is not intra-coded, DC prediction is skipped for the current block.

Each of claims 26 (method claim), 69 (computer-readable media claim) and 83 (system claim), as amended, further recites:

according to a set of AC prediction rules when the AC prediction is enabled, wherein the set of AC prediction rules indicates how to selectively perform the AC prediction as follows:

differentially coding top row AC coefficients for the current block if the selected DC predictor is from the top block;

differentially coding left column AC coefficients for the current block if the selected DC predictor is from the left block; and

skipping differential coding of AC coefficients for the current block if DC prediction is skipped for the current block.

The Jeng publication fails to teach or suggest the above-cited "DC predictor selection rules" and "AC prediction rules" of claims 26, 69, and 83, respectively. The Jeng publication describes DC prediction and AC prediction for DCT coefficients of blocks of video frames. Jeng publication, ¶¶ 36-55. The Jeng publication describes special treatment for candidate blocks that are missing because they are outside a VOP boundary or not intra-coded. Jeng publication, ¶ 41. According to the Jeng publication:

> As shown in FIG. 4, the value $QF_X[0][0]$, the DC value of the X block, is predicted either from the DC position of block A or block C, depending on the previously encoded DC values of blocks A, B and C. For example, if the gradient in the DC value between block A and block B is less than the gradient between block B and block C, then the prediction is done from block C. Otherwise, the prediction is done from block A. Therefore:
>
> If $(|F_A[0][0] - F_B[0][0]| < |F_B[0][0] - F_C[0][0]|)$ then
> predict from block C else
> predict from block A.
>
> *If any of the blocks A, B or C are outside of the VOP boundary, or the video packet boundary, or they do not belong to an intra coded macroblock, then their QF[0][0] values can be set to an arbitrarily high value, such as* $2^{(bits\_per\_pixel+2)}$*, for example, and used to compute the prediction values.*

Jeng publication, ¶¶ 37-41, paragraph numbers omitted, emphasis added. In other words, for any block A, B, or C that is not intra-coded, a "dummy" value of $2^{(bits\_per\_pixel+2)}$ is used for it in the rule: "If $(|F_A[0][0] - F_B[0][0]| < |F_B[0][0] - F_C[0][0]|)$ then predict from block C else predict from block A."

The Jeng publication thus describes special treatment for predictor blocks that are not intra-coded, but it proposes a mechanism that leads away from the above-cited "DC predictor selection rules" of claims 26, 69, and 83, respectively. Using a dummy value such as

$2^{(bits\_per\_pixel+2)}$ for a predictor block that is not intra-coded (as in the Jeng publication) is different than, and leads away from, the "DC predictor selection rules" of claims 26, 69, and 83, respectively.

As for AC prediction, the Jeng publication indicates "[o]n a block-by-block basis, the direction prediction utilized in the DC prediction is also utilized in the AC prediction." Jeng publication, ¶ 49. Even with this description of AC prediction, the Jeng publication does not teach or suggest the "AC prediction rules" of claims 26, 69 and 83, respectively. In particular, using the direction of DC prediction for AC prediction (as in the Jeng publication) is different than, and leads away from, skipping differential coding of AC coefficients for the current block when AC prediction is enabled but DC prediction is skipped for the current block.

For at least these reasons, independent claims 26, 69 and 83 should be allowable. Each of dependent claims 27-30, 70-73 and 84-86 depends from one of claims 26, 69 and 83 and, for at least this reason, should be allowable. The Applicants will not belabor the merits of the separate patentability of dependent claims 27-30, 70-73 and 84-86.

IV. Claims 31, 32, 74, 75, 87 and 88 Should Be Allowable.

In the Office action, the Examiner rejects claims 31, 32, 74, 75, 87, and 88 under 35 U.S.C. 103(a) as being unpatentable over the Eifrig patent in view of the Jeng publication.

Each of claims 31, 32, 74, 75, 87 and 88 depends from one of claims 26, 69, and 83. As noted in the preceding section, the Jeng publication fails to teach or suggest the "set of DC predictor selection rules" and "set of AC prediction rules" recited in claims 26, 69 and 83, respectively. The Eifrig patent fails to overcome this deficiency – it also fails to teach or suggest the "set of DC predictor selection rules" and "set of AC prediction rules" recited in claims 26, 69 and 83, respectively.

V. Conclusion and Request For Interview

The claims in their present form should now be allowable. Such action is respectfully requested.

If any issues remain, the Examiner is formally requested to contact the undersigned attorney prior to issuance of the next Office Action in order to arrange a telephonic interview. It is believed that a brief discussion of the merits of the present application may expedite

prosecution. Applicants submit the foregoing formal Amendment so that the Examiner may fully evaluate Applicants' position, thereby enabling the interview to be more focused. This request is being submitted under MPEP § 713.01, which indicates that an interview may be arranged in advance by a written request.

Respectfully submitted,

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